

Electronic & Magnetic Materials & Devices

QuickTime™ and a TIFF (Uncompressed) decompressor are needed to see this picture.

Major Tools

- Electron beam evaporator and sputtering deposition (Oct 2007)
- Luminescence spectrometer
- Magnetometry (PPMS & MPMS)
- Oxide MBE (Fall 2007)
- Raman spectrometer (Fall 2007)
- Rheometer
- Scanning probe microscope
- Solar simulator (June 2007)
- SPM/SEM combined (Omicron UHV)
- TGA/DSC
- UV-Vis-NIR
- X-ray diffractometer

Group Leader

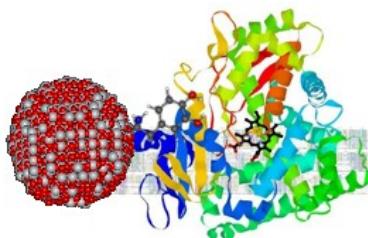
Matthias Bode
mbode@anl.gov



Group Members

- Anand Bhattacharya, anand@anl.gov
 - oxide MBE
- Matthias Bode, mbode@anl.gov
 - spin-polarized STM
- Kristen Buchanan, buchanan@anl.gov
 - magnetometry
- Seth Darling, darling@anl.gov
 - AFM/SPM, lithographic self-assembly
- Axel Hoffman, hoffman@anl.gov
 - magnetism
- Xiao-Min Lin, xmlin@anl.gov
 - synthesis of nanocrystal building blocks

Nanobio Interfaces



Major Tools

- Electrochemical Workstation BAS 100B/W
- Electron paramagnetic resonance
- Functionalization, electro- & photochemical
- HPLC
- Laser Scanning Confocal Microscope
- PCR (available Dec. 2007)
- Post-self-assembly processing
- Schlenk Lines
- Solvent Purification
- Spectroelectrochemistry
- Synthesis & surface modification of nanoparticles

Group Leader

Tijana Rajh
rajh@anl.gov

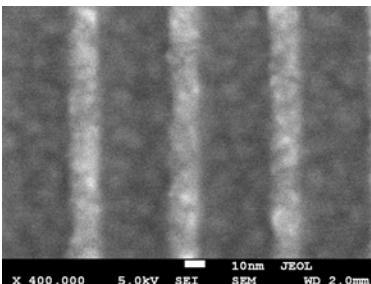


Group Members

The integration of "soft" biological and organic molecular assemblies with "hard" inorganic nano-architectures can be applied to chemical catalysis, sensors, information storage, artificial vision, and biological intervention.

The group is currently hiring scientists specializing in bio-organic synthesis, synthetic biology, synthesis & characterization, and synthesis & techniques.

Nanofabrication



Major Tools

- JEOL 9300 FS, 100 KV Electron Beam Lithography
- Raith 150, 30 KV Electron Beam Lithography
- FEI Nova 600 NanoLab DualBeam FIB/SEM
- Nanonex NX-3000 Step and Repeat Nanoimprint
- Direct write optical lithography (Oct 2007)
- Interferometric lithography (Oct 2007)
- Resist processing
- Plasma processing (chlorine, fluorine chambers barrel ash system)
- Wet Chemistry & Metrology
- Deposition (ebeam evaporator and sputtering, MOCVD)
- Nanocrystalline diamond deposition (Oct 2007)

Group Leader

Derrick Mancini
mancini@anl.gov



Group Members

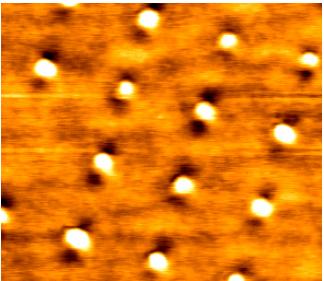
- Orlando Auciello, auciello@anl.gov
 - oxide and nanocarbon films, MEMS, NEMS
- Ralu Divan, divan@anl.gov
 - lithography, nanogels, MEMS/NEMS technology
- Valentina Kutepova, kutepova@anl.gov
 - cleanroom manager
- Derrick Mancini, mancini@anl.gov
- Leo Ocola, ocola@anl.gov
 - nanofabrication, electron beam lithography
- Anirudha Suman, sumant@anl.gov



Center for Nanoscale Materials

Director: Eric D. Isaacs
Assoc. Dir. for Science: Stephen Streiffer
Assoc. Dir. for Facilities: Derrick Mancini
Manager of User Programs: Katie Carrado
mailcnmuseroffice@anl.gov

Nanophotonics



Major Tools

- Aperture NSOM
 - CW laser excitation
 - ultrafast laser excitation
- Apertureless NSOM
 - CW laser excitation
 - ultrafast laser excitation
- Colloidal synthesis
- Confocal Raman microscopy (Aug 2007)
- NSOM fiber puller
- Time-correlated single photon counting

Group Leader

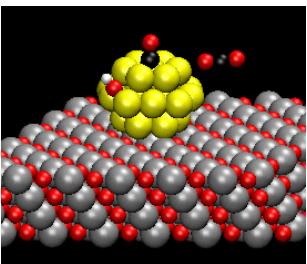
Gary Wiederrecht
wiederrecht@anl.gov



Group Members

- David Gosztola, gosztola@anl.gov
 - laser spectroscopy and electrochemistry
- Matthew Pelton, pelton@anl.gov
 - physical phenomena of light interacting with nanomaterials
- Yugang Sun, ygsun@anl.gov
 - synthesis/fab of functional nanomaterials
 - optical, electronic, mechanical properties
- Gary Wiederrecht, wiederrecht@anl.gov
 - new microscopies with spatial resolution below the diffraction limit

Theory & Modeling



Major Tools

- Access to computational codes
 - Density-functional-based tight-binding electronic structure package
 - MPI-based parallel versions of nanophotonics and tight-binding codes
 - Time-domain nanophotonics simulation
 - Web-based magneto-optic simulation
- Access to Argonne computer facilities
- Support for experimental projects
- Support for theoretical projects

Group Leader

Larry Curtiss
curtiss@anl.gov



Group Members

- Larry Curtiss, curtiss@anl.gov
 - quantum chemical studies
- Jeff Greeley, igreeley@anl.gov
 - nanocatalysis
- Michael Sternberg, sternberg@anl.gov
 - software development
- Stephen Gray (affiliation), gray@tcg.anl.gov
 - quantum dynamics, FDTD

X-ray Microscopy



Major Tools

- Hard X-ray nanoprobe beamline, sector 26 of APS (rampup Oct 2007 – Sept 2008)
- Full field transmission microscopy (8-12 keV)
 - 2D imaging in absorption contrast and phase contrast (Zernicke)
 - Tomography
- Scanning probe microscopy (8-12 keV in 2007, 3-30 keV in 2008)
 - Nanodiffraction (2007)
 - X-ray fluorescence microscopy (2007)
 - Differential phase contrast imaging (2008)
 - Magnetic imaging (2008)
 - Time resolved experiments (2008)

Group Leader

Jorg Maser
maser@anl.gov



Group Members

- Martin Holt, mvholt@aps.anl.gov
- Jorg Maser, maser@anl.gov
 - x-ray microscopy, x-ray optics
- Brian Stephenson, stephenson@anl.gov
- Robert Winarski, winarski@aps.anl.gov
 - x-ray imaging